Why do workers spray liquid onto the roadways before a big storm arrives? If you live in Idaho, you've probably asked yourself that question. It may seem dangerous to add liquid to a road that might freeze, but that liquid can be your best friend when winter driving conditions are at their worst.

That liquid, known as magnesium chloride solution, can prevent snow from sticking to the road and prevent frost or black ice. It's one of the newest weapons against icy roads.

Thanks to magnesium chloride, winter driving can be a safer experience. The following commonly-asked questions and answers will help you learn more about magnesium chloride and the benefits it can offer motorists.

WHAT IS MAGNESIUM CHLORIDE?

Magnesium chloride works like anti-freeze by lowering the freezing temperature of water and preventing ice from forming a strong bond to the road.

It helps keep roads from becoming slick, improves safety and reduces accidents.

IS IT SAFE?

Magnesium chloride is less toxic than baking soda or salt. Unlike sand, it won't crack your windshield or chip your car's paint.

Tests have shown that the proper application of magnesium chloride produces no negative effects on ground water, surface water or vegetation.

WHAT CAN I DO IF I DRIVE ON ROADS WHERE MAGNESIUM CHLORIDE IS USED?

Wash your car on a regular basis. Magnesium chloride (along with slush and dirt from the roads) can splash onto your car and build up after time, leaving a filmy residue on your car. Make car washing part of your regular maintenance routine, and you'll help keep residue from the winter roads off of your car.

HOW CAN DRIVERS HELP WHEN THE ROADS ARE BEING CLEARED?

Use caution when driving in winter conditions, and cooperate with the highway workers that clear the roadways. Here are some additional safety tips:

- Remain two car lengths behind snowplow trucks for every 10 mph you drive. Sand being spread by trucks can damage your vehicle.
- Do not pass a snowplow unless it is absolutely necessary. If you must pass, do so only when you can clearly see the road ahead. Do not pass on the side where the plow is spraying snow. If you do, the snow's force can knock your car out of control.
- Do not cut back immediately in front of a snowplow truck. The plow blades are often covered with snow and can be difficult to see.
- Do not brake suddenly if you are traveling in front of a snowplow. The heavy vehicle cannot stop as quickly as an automobile.
- Do not abandon your car unless it is absolutely necessary. However, if you must, leave it as far off the road as possible. Abandoned cars can interfere with the road clearing process and can be extremely hazardous to snow removal equipment and the operators if they are hidden or buried by snow.
- Be aware of potential icy areas such as shady spots, bridges and overpasses. Since they are exposed on their undersides, bridges and overpasses are deprived of ground warmth and freeze more rapidly than the roadways leading to them.
- Before you begin your trip, make sure your car's windows, mirrors and lights are clear of snow. Keep your windshield washers filled with a non-freezing solution all winter.
- Keep an emergency winter driving kit in your car. The kit should include: flashlights with extra batteries, a first aid kit with a pocket knife, at least one blanket, an extra set of mittens, socks and a wool cap, a small sack of sand or cat litter for generating traction under the wheels, a small shovel, bottled water, booster cables, canned fruit, nuts and a non-electric can opener.
- Check for current highway and weather conditions by logging onto the Web at 511.idaho.gov or access the the statewide telephone reporting system by dialing 5-1-1. Information is available 24 hours per day about road closures, highway and weather conditions, mountain passes and the interstate highway system.

FACTS ABOUT MAGNESIUM CHLORIDE

WHY NOT USE SAND?

In many cases magnesium chloride works better than sand. It keeps snow from firmly sticking to the pavement. Magnesium chloride also lasts longer than sand and works in a broader range of conditions.

Sand can be crushed by traffic and produce airborne dust, which contributes to pollution. Because sand is easily blown off the road by traffic, it requires repeated applications.

HOW IS MAGNESIUM CHLORIDE USED?

Anti-icing: A light application of the liquid is made to a road before a storm to prevent a hard bond of ice, reduce snow buildup and speed snow and ice breakup after the storm.

De-icing: The liquid is applied to remove a thin layer of snowpack or ice already on the road. It can be very effective for melting black ice and freezing rain.

Pre-wetting: Wetting traditional sanding material with magnesium chloride causes sand to stick to snowpack better. Keeping sand on the road is nearly impossible in some circumstances, especially in very cold weather and in cases where there's traffic at highway speeds. Magnesium chloride can keep the sand from blowing to the shoulder of the road.

WHAT ABOUT THE COST?

Magnesium chloride is usually the most cost-effective alternative when considering the whole picture. There are less expensive chemicals to use for snow and ice control, such as salt and straight calcium chloride. But those alternatives can be harmful to vehicles, bridges and the environment.

Magnesium chloride is a good alternative because it is less corrosive and works better than other chemicals. It reduces environmental impact, bridge corrosion and vehicle damage.

In the last few years Idaho has worked with Montana, Washington, Oregon and British Columbia to develop higher standards for a de-icer. The goal among these four regions is to use a de-icer that is appropriate for our environment and less corrosive than other alternatives.

CLEARING IDAHO'S ROADS

Most of us can't put our lives on hold when it snows. That's why the Idaho Transportation Department strives to make winter travel as safe as possible. Although many drivers have watched snowplows clear the roads, there are some important facts you should know about snow removal:

HOW DOES ITD PREPARE FOR THE SNOW AND ICE SEASON?

During the year, more than 400 ITD maintenance personnel prepare for the snow season by stockpiling necessary supplies. In the fall, the same trucks that have been used during the summer for stockpiling, patching and other maintenance operations are equipped with snowplows. Employees also receive training to operate new equipment.

HOW DOES ITD DECIDE WHICH ROADS TO CLEAR FIRST?

ITD considers these factors for clearing roads in the state highway system:

- Traffic volumes
- Accident reduction
- Number of steep grades, sharp curves, intersections, ramps or potentially hazardous areas
- Availability of manpower and equipment resources

ITD applies magnesium chloride to roads in many areas before a storm arrives. Once the anti-icing work is completed, ITD responds to winter storms as they occur and attempts to clear all roads as the snow begins to fall. However, in situations where a storm covers a large area, resources can be stretched beyond available limits. In these situations a system of priorities is followed to provide the best service.

Interstates and roads that have the highest volume of traffic are cleared first. Workers continue to clear roads with top priority placed on the most-traveled roads down to areas with lower volumes of traffic.

Some routes, because of concerns for public safety, high difficulty and cost of winter maintenance, may be closed for short durations until manpower and equipment resources are available for snow removal.

The winter maintenance priorities on the state highway system are approved by the Idaho Transportation Board.

WHAT SHOULD BE DONE IF A MEDICAL EMERGENCY OCCURS IN AN AREA WHERE THE ROADS HAVE NOT BEEN CLEARED?

In case of medical emergencies in areas where roads have not been plowed, the local or state police should be called. These agencies will work with search and rescue personnel and ITD to respond to emergencies.

IDAHO TRANSPORTATION DEPARTMENT